

REMARKS

Claims 22-44 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Nantz et al. (U.S. Patent No. 6,653,474) in view of Fukumoto (U.S. Patent No. 6,294,974). Applicants respectfully traverse.

By this amendment claims 22, 23, 28-30, and 44 have been amended. More particularly, independent claim 22 has been amended to include the limitations of claims 23, 26 and 27. Independent claim 44 has been amended to clarify the differences between the claimed invention and the cited references.

Section 103(a) Rejections

Claims 22-44 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Nantz et al. (U.S. Patent No. 6,653,474) in view of Fukumoto (U.S. Patent No. 6,294,974). Nantz et al. discloses an antenna having a first inductor with a first axis, a second inductor with a second axis, and a third inductor with a third axis, where the first, second and third axes may be oriented substantially perpendicular to each other respectively. Contrary to the assertion in the Office Action that Nantz et al. teaches the claimed multiaxial antenna comprising "a generally cross-shaped core, which includes an X-axis arm portion and an Y-axis arm portion extending perpendicular to each other" in column 4, lines 56-65 and column 5, lines 51-59, Nantz et al. does not show or suggest the cross-shaped core recited in amended independent claim 22. The core shown by Nantz et al. includes a single form (40) on which each of the coils (10, 20, 30) is wound. Form 40 is not shown to be cross-shaped.

Independent claim 22 has further been amended to recite "a Z-axis coil portion provided about a Z-axis that extends perpendicular to the X-axis arm portion and the Y-axis arm portion" and "wherein the casing has a winding concave portion formed at its periphery, the Z-axis coil portion being wound about the casing and being received in the winding concave portion." The winding concave portion (86) is shown in, for example, FIG. 4 and FIG. 12 of the instant application. As claimed, the casing of the invention not only accommodates the X-axis coil portion (73a) and the Y-axis coil

portion (73b) but also functions as a bobbin about which the Z-axis coil portion (73c) is wound.

With regard to the Z-axis coil portion limitation now found in amended independent claim 22, the Office Action states that "Claim 27 adds into claim 26, wherein the casing has a winding concave portion at its periphery for receiving the Z-axis coil portion which Fukumoto teaches in column 8, lines 53-65." A reading of the cited portion of Fukumoto shows that Fukumoto does not show or suggest the winding concave portion of amended independent claim 22. Rather, the cited portion of Fukumoto relates to the installation of cross core sections of the coil. In fact, Fukumoto does not have a coil wound about the outside of the cross core sections 30A and 30B (see FIG. 2).

The claimed invention provides a casing which accommodates the X-axis and Y-axis coil portions. FIG. 2 of Fukumoto shows a casing (12) for accommodating a coil section (20A). The casing (12) has no winding concave portion. In addition, Fukumoto merely discloses an ignition coil having primary and secondary coil sections. As shown in FIG. 2 of Fukumoto, the coil section (20A) includes a bobbin (22) and primary and secondary coils (45, 40) wound around the bobbin (22). The primary and secondary coils (45, 40) are provided about a single axis. The members indicated by reference numerals (30A) and (30B) are cross-shaped core sections but are not coils.

The Office Action has failed to show any reason, suggestion or motivation from Fukumoto as a whole for the person of ordinary skill to have combined or modified Nantz et al. in view of Fukumoto. Fukumoto relates to an ignition coil for internal combustion engines having a case (12) including a cross-shaped positioning groove (13) into which the cross-shaped section (30A) is fitted. Furthermore, Fukumoto does not show or suggest the claimed features recited in independent claim 22, particularly the winding concave portion of the casing. Withdrawal of this rejection is respectfully requested.

Claims 28-43 depend directly or indirectly from amended independent claim 22 and include all of the limitations thereof. For at least the reasons set forth above, claims 28-43 patentably distinguish over the cited prior art. Withdrawal of this rejection is respectfully requested.

Independent claim 44 has been amended to clarify the difference between the claimed invention and the cited references. As amended, independent claim 44 recites a casing "shaped generally like a square, wherein the core equipped with the coil portions is accommodated in the accommodating concave portion so that the X-axis arm portion and the Y-axis arm portion extend along the diagonal lines of the casing, each diagonal line joining opposite corners of the square casing." As shown in FIG. 11 of the present application, the X-axis and Y-axis arm portions (72, 72) extend along the diagonal lines of the square casing (81). As discussed above, Nantz et al. does not show or suggest a cross-shaped core. Furthermore, Fukumoto does not show or suggest a cross-shaped core having windings extending along the diagonal lines of the casing. Withdrawal of this rejection is respectfully requested.

Claims 23-27 depend directly or indirectly from amended independent claim 44 and include all of the limitations thereof. For at least the reasons set forth above, claims 23-27 patentably distinguish over the cited prior art. Withdrawal of this rejection is respectfully requested.

The claimed invention has benefits set forth in the specification, such as size reduction, which are neither taught nor suggested by Nantz et al or Fukumoto. In view of the forgoing, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance to this effect is respectfully requested.

Respectfully submitted,

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